UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,723	09/17/2003	Chaohuang Zeng	ATHEP122	6055

21912   7590   10/01/2009
VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER
SINGH, HIRDEPAL

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
10/01/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/666,723	ZENG ET AL.
	Examiner	Art Unit	
	HIRDEPAL SINGH	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2009*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8, 10-14 and 20* is/are pending in the application.
     4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1,2,6-8,10-14 and 20* is/are rejected.
7)☒ Claim(s) *3-5* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
     a)☐ All   b)☐ Some * c)☐ None of:
       1.☐ Certified copies of the priority documents have been received.
       2.☐ Certified copies of the priority documents have been received in Application No. _____.
       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the amendment filed on August 21, 2009.

Claims 1-8, 10-14 and 20 are pending and have been considered below.

Response to Arguments

2.   Applicant's arguments filed August 21, 2009 have been fully considered

but they are moot in view of the new ground(s) of rejection

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1 and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Rowitch et al. (US 2004/0042536) in view of Chang et al. (US

2004/0146091).

Regarding claims 1 and 20:

Rowitch discloses a system and method for packet detection comprising:

sampling a received signal (abstract; paragraph 0010 generated input signal

samples) to produce a sequence of samples wherein the sequence of samples

includes a plurality of subsequences of samples' (paragraphs 0012 and 0018);

cross correlating (paragraphs 0014 dot product as in present invention figure 4) the subsequences of samples with a known form of the subsequence to produce one cross correlation for each of the plurality of subsequences of samples (paragraph 0010 number of correlations) according to a pseudorandom sequence (figure 5; paragraph 0037);

self correlation the cross correlation to produce plural correlations (420 and 528 in figures 4 and 5);

summing the self correlation (524 and 642 in figures 5 and 6) including adjusting the sign of each of self correlation according to known sequence that correspond to pseudorandom sequence (paragraphs 0015 and 0035);

detecting a packet at least in part by processing sum of self correlations (paragraphs 0009, 0026 and 0028).

Rowitch discloses all of the subject matter as described above, except for specifically teaching, wherein sequence is adjusted in the sign of each of self correlation according to known sequence.

Chang in the same field of endeavor discloses a system and method for carrier sensing, signal and link quality where summing the self correlation (as shown in figure 4), including adjusting the sign of each of self correlation according to known sequence (paragraphs 0017 and 0043).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention, to implement the teachings of Chang into Rowitch in order to achieve symbol synchronization in the communications system by detecting the

training pulse through pulse train detector and enhance quality of communication

by carrier sensing, signal and link quality in a simple way.

5.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Rowitch et al. (US 2004/0042536) in view of Chang et al. (US 2004/0146091) as

applied to claim 1 above, and further in view of Husted et al. (2002/0183027).

Regarding claim 2:

Rowitch discloses all of the subject matter as described above except for

specifically teaching comparing of magnitude of the sum of the self correlations

to a threshold.

Husted teaches, 'processing the sum of the self correlations includes

comparing the magnitude of the sum of the self correlations to a threshold

(paragraphs 0060-0065).

It would have been obvious to one of ordinary skill in the art, at the time of

invention was made, to implement the teachings of Husted into Rowitch in order

to differentiate desired in-band signals from high power out-of-band signals that

overlap into the target band by verifying the in-band signals by a multi-threshold

comparison of the normalized self-correlation to verify the presence of a new,

desired in-band signal as taught by Husted (see Abstract) thus provide an

automatic gain control system for a receiver.

6.   Claims 1, 10, 12, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Marshall (5, 598,429) in view of Muratani et al.

(7,123,744) and further in view of Chang et al. (US 2004/0146091).

Regarding claims 1 and 20:

Marshall discloses a system and method for sampling a received signal to

produce a sequence of samples wherein the sequence of samples includes a

plurality of subsequences of samples' (figure 5, elements 303 & 304, col.2, lines

57-64), 'cross correlating the subsequences of samples with a known form of the

subsequence to produce one cross correlation for each of the plurality of

subsequences of samples' (see Abstract, lines 1-6, figure 5, element 307 & figure

8, col.3, lines 4-40).

Marshall also processes the digital correlated values (figure 15) except for

specifically teaching, wherein (1) summing the self correlation, including

adjusting the sign of each of self correlation according to known sequence; and

(2) self correlation the cross correlation.

Regarding item (1) above, Chang in the same field of endeavor discloses a

system and method for carrier sensing, signal and link quality where summing

the self correlation (as shown in figure 4), including adjusting the sign of each of

self correlation according to known sequence (paragraphs 0017 and 0043).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention, to implement the teachings of Chang into Marshall in order to

achieve symbol synchronization in the communications system by detecting the

training pulse through pulse train detector and enhance quality of communication

by carrier sensing, signal and link quality in a simple way.

Regarding item (2) above, Muratani auto correlating (self correlation) the

cross correlation (figure 3, elements 31 & 34, col.7, lines 5-10) and produce

plurality of self correlations (figure 9, elements 38, col.11, lines 30-43) (it is noted

that in figure 9 Muratani discloses circuits 91 to 9N each includes auto correlation

units which generates plurality of outputs which are combined (figure 9, element

18 & figure 10, col. 11, lines 28-34 & 39-43)(claimed 'summing the self

correlations') and output as a whole as the detecting result 38 (figure 10, col.11,

lines 39-43) and thus reads on claim limitations of 'self correlating the cross

correlations to produce a plurality of self correlations' and 'summing the self

correlations').

Therefore, It would have been obvious to one of ordinary skill in the art, at the

time invention was made, to implement the teachings of Muratani into Marshall in

order to determine the peak position and period of the number sequence by auto

correlating (self correlating) the cross correlation in order to detect the target

value as taught by Muratani (col.4, lines 3-14).

Regarding claim 10:

Marshall discloses all of the subject matter as described above except for

specifically teaching pseudorandom sequence.

Muratani teaches auto correlations (claimed 'self correlation') according to a

pseudo-random sequence (figure 3, elements 32, 31 & 35) (claimed 'self

correlations according to a pseudorandom sequence').

It would have been obvious to one of ordinary skill in the art, at the time

invention was made, to implement the teachings of Muratani into Marshall, ran

and Bohnke in order to determine the peak position and period of the number

sequence by using the pseudorandom sequence for auto correlating (self

correlating) the cross correlation in order to detect the target value as taught by

Muratani (col.4, lines 3-14 & 63-67, col.5, lines 1-7).

Regarding claim 12:

Marshall discloses all of the subject matter as described above and further

discloses resetting upon the occurrence of an automatic gain control adjustment'

(figure 13, element 701, 'average digital AGC', col.8, lines 30-61).

7.   Claims 2, 6, 8, 11, 14 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Marshall (5, 598,429) in views of Muratani et al. (7,123,744)

and Chang et al. (US 2004/0146091), as applied to claim 1 above, and further in

view of Husted et al. (2002/0183027).

Regarding claim 2:

Marshall discloses all of the subject matter as described above except for

specifically teaching comparing of magnitude of the sum of the self correlations

to a threshold.

Husted teaches, 'processing the sum of the self correlations includes

comparing the magnitude of the sum of the self correlations to a threshold' (page

5, paragraphs # 0060-0065).

It would have been obvious to one of ordinary skill in the art, at the time of invention was made, to implement the teachings of Husted into Marshall in order to differentiate desired in-band signals from high power out-of-band signals that overlap into the target band by verifying the in-band signals by a multi-threshold comparison of the normalized self-correlation to verify the presence of a new, desired in-band signal as taught by Husted (see Abstract) thus provide an automatic gain control system for a receiver.

Regarding claim 6:

Marshall discloses all of the subject matter as described above except for specifically teaching a first threshold and second threshold comparison for the summed magnitudes of the self correlations.

Husted discloses, 'processing the sum of the self correlations includes comparing for a period of time the magnitude of the sum of the self correlations to a first threshold and summing magnitudes of the sum of the self correlation that exceed the first threshold and comparing the summed magnitudes to a second threshold' (page # 5, paragraphs # 0061-0063 & 0065).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the teachings of Husted into Marshall in order to differentiate desired in-band signals from high power out-of-band signals that overlap into the target band by verifying the in-band signals by a multi-threshold comparison of the normalized self-correlation to verify the presence of a new, desired in-band signal as taught by Husted (see Abstract) thus provide an automatic gain control system for a receiver.

Regarding claim 8:

Marshall discloses all of the subject matter as described above except for specifically teaching determination of packet boundary based on the time and the sum of the self correlation is maximum.

Husted teaches, 'processing the sum of the self correlations includes determining a packet boundary based on the time when the sum of the self correlations is determined to be a maximum' (page # 5, paragraphs # 0061, 0063 & 0064).

It would have been obvious to one of ordinary skill in the art, at the time of invention was made, to implement the teachings of Husted into Marshall in order to differentiate desired in-band signals from high power out-of-band signals that overlap into the target band by verifying the in-band signals by a multi-threshold comparison of the normalized self-correlation to verify the presence of a new, desired in-band signal as taught by Husted (see Abstract) thus provide an automatic gain control system for a receiver.

Regarding claim 11:

Marshall discloses all of the subject matter as described above except for specifically teaching resetting the sum to zero.

Husted teaches, 'resetting the sum of the self correlations to zero upon the occurrence of an automatic gain control adjustment' (figure 3, page # 4, paragraph # 0043-0048) (it is noted in the mentioned paragraphs that if the acc_count counter is zero, accumulator adcpwr1 is being reset and it happens during AGC operation (page # 4, paragraph # 0043-0045) (claimed 'occurrence

of an automatic gain control'), furthermore, AGC 230 takes the power

measurement from power detector 220, which is connected to self correlation

225, (figure 3, page # 2, paragraph # 0024) and these measurements involves

maximum output zero based on the log table calculation (page # 3, paragraph #

0035) which reads on claim limitations of 'resetting the sum of the self

correlations to zero' since both power detector 220 and self-correlator 225 are

connected together in order to output the signal to the AGC control 230 (figure 3).

It would have been obvious to one of ordinary skill in the art, at the time of

invention was made, to implement the teachings of Husted into Marshll in order

to differentiate desired in-band signals from high power out-of-band signals that

overlap into the target band by verifying the in-band signals by a multi-threshold

comparison of the normalized self-correlation to verify the presence of a new,

desired in-band signal as taught by Husted (see Abstract) thus provide an

automatic gain control system for a receiver.

Regarding claim 14:

Marshall discloses all of the subject matter as described above except for

specifically teaching reducing the number of bits.

Husted teaches, 'rescaling the received signal to reduce the number of bits

required for cross correlation and self correlation' (page # 2, paragraph # 0022,

lines 6-13).

It would have been obvious to one of ordinary skill in the art, at the time of

invention was made, to implement the teachings of Husted into Marshall in order

to differentiate desired in-band signals from high power out-of-band signals that

overlap into the target band by verifying the in-band signals by a multi-threshold comparison of the normalized self-correlation to verify the presence of a new, desired in-band signal as taught by Husted (see Abstract) thus provide an automatic gain control system for a receiver.

8.   Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall (5, 598,429) in views of Muratani et al. (7,123,744) and Chang et al. (US 2004/0146091), as applied to claim 1 above, and further in view of Kim (7,012,881).

Regarding claim 7 and 13:

Marshall discloses all of the subject matter as described above except for specifically teaching determination of frequency offset.

Kim discloses, 'processing the sum of the self correlations includes determining a frequency offset from the phase of the sum of the self correlations' (figures 2 & 3, col.8, lines 40-67), 'including determining a frequency offset from the angle of the sum of the self correlations' (figures 2 & 3, col.8, lines 40-67).

It would have been obvious to one of the ordinary skill in the art, at the time of invention was made, to implement the teachings of Kim into Marshall in order to estimate frequency offset for OFDM and achieve frequency synchronization as taught by Kim (col.3, liens 39-54) thus enhance system performance.

Allowable Subject Matter

9.   Claims 3-5 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

10.   The following is a statement of reasons for the indication of allowable

subject matter: The prior art of record discloses a packet detection system and

method in communication systems where the incoming signal samples are cross

correlated with a known sequence and the resulted signal is then adjusted in sign

and self correlated with a sum of correlation is used for detection, but prior art

fails to disclose that for detection the system is processing the sum of the self

correlations includes comparing for a period of time the magnitude of the sum of

the self correlations to a first threshold and summing the sums of the self

correlation whose magnitudes exceed the first threshold and comparing the

magnitude of summed sums to a second threshold and also the sum of the self

correlations includes comparing for a period of time the magnitude of the sum of

the self correlations to a first threshold and summing magnitudes of the sum of

the self correlation that exceed the first threshold and comparing the summed

magnitudes to a second threshold.

Conclusion

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to HIRDEPAL SINGH whose telephone number

is (571) 270-1688. The examiner can normally be reached on Mon-Fri (Alternate

Friday Off) 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. S./
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611